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PHYTOCORIS FALLÉN—TWELVE NEW SPECIES FROM THE WESTERN UNITED STATES (HEMIPTERA, MIRIDAE).

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For the past few years the writer has been working toward a monograph of the North American species of *Phytocoris*, probably the largest genus in the family Miridae. Up to the present writing, 132 species have been described from the United States and Lower California. Adding twelve new ones raises the total to 144 species. Consulting my manuscript catalogue of the Miridae for the world, I count 291 names in the genus that represent species in good standing. The present quota of twelve species raises the total number to 303 species for the world. Difficulties attending publication of long papers leads me to publish on the new species as rapidly as I have opportunity to work them out. Sometime I expect to publish keys to the species but this may await publication of a Manual treating the whole family for north of Mexico.

Phytocoris rolfsi n. sp.

Allied to *laevis* Uhler but differs in the pale and fuscous brown coloration, also distinguished by the longer and more convex frons.

♂. Length 9.5 mm., width 2.6 mm. Head: width 1.18 mm., vertex .443 mm., from base of eyes to tip of frons .67 mm.; frons strongly produced, convexity almost conical in form, extending beyond and overhanging the tylus, each side of frons with seven or eight oblique, slender brown lines; antero-dorsal angle of lora with tubercle projection as in *laevis*. Rostrum, length 2.73 mm., reaching to near hind margins of posterior coxae, pale to brownish, apex black. Antennae: segment I, length 2.16 mm., thickness at base .173 mm., tapering to more slender on apical half (.13 mm.) then enlarged at apex, color grayish white, irregularly sprinkled with fine

brownish dots, clothed with inconspicuous pale pubescence and intermixed with a few somewhat longer white hairs; II, 4.74 mm., slender, cylindrical, pale to dusky brown on apical half; III, 2.38 mm., slender, finely pale pubescent, dusky to fuscous at apex; IV, broken. Pronotum: length 1.17 mm., width at base 1.99 mm.; mesoscutum rather broadly exposed as in *laevis*, but the scutellum not so strongly convex on apical half.

Dorsum clothed with rather closely appressed silvery, sericeous pubescence which on darker areas becomes golden yellow as on inner half of clavus, interspersed on corium and inner half of cuneus with more erect short fuscous hairs. General coloration pale and shaded with fuscous and brown; scutellum with black mark each side on margin before apex, dark specimens with geminate wedge on mesoscutum and extending upon base of scutellum but the dark color separating into dots; spot behind inner angles of calli, anterior angles of pronotal disk and collum just opposite, stripe each side on mesoscutum and a spot near inner angle of cuneus, black. Hemelytra with pale to white ground color, more or less darkened by fusco-brownish, the dark color breaking into reticulations, the darker areas as on middle and inner apical half of corium inclosing pale irrorations; inner half of clavus brownish to fuscous, but invaded at base by paler spots; cuneus fully twice as long as wide at base, sprinkled with fuscous brown dots. Membrane and veins pale to white, bordering veins within cells and a curving ray each side behind areoles and attaining apex of membrane, fusco-brownish, the dark color breaking into spots and reticulations at margins; anal vein fuscous, behind this the inner marginal area of membrane sprinkled with fuscous dots. Legs pale and marked with fuscous and brown, femora reticulate with fusco-brownish, darker on apical half so that the pale color may show as irrorations; tibiae largely pale, tips fuscous, bases marked with brownish, tarsi blackish. Venter shaded and marked with fuscous and brown, the dark color tending to emphasize a pale lateral line. Genital claspers exhibit a close relationship with *laevis* Uhler, but tip of right clasper provided with a longer and a stronger incurved claw.

♀. Length 8.7 mm., width 2.5 mm. Head: width 1.17 mm., vertex .52 mm. Antennae: segment I, length 2.16 mm.; II, 4.07 mm.; III, 2.03 mm.; IV, .85 mm. Pronotum: length 1.17 mm., width at base 2.07 mm. Very similar to the male in form, pubescence and coloration.

Holotype: ♂, Sept. 23, 1931, Wiley City, Washington (A. R. Rolfs); author's collection. *Allotype*: ♀, Sept. 15, 1932, Yakima, Washington (A. R. Rolfs). *Paratypes*: ♂, taken with the type on

rabbit bush (*Chrysothamnus nauseosus* Pall.). 8♀, Sept. 15, 1932, Yakima, Washington (A. R. Rolfs), taken with the allotype on *Chrysothamnus nauseosus* Pall. ♂, Aug. 15, 1931, Yakima; ♀, Sept. 3, 1932, Tampico, Washington (A. R. Rolfs).

Mr. Rolfs writes: "When I took these *Phytocoris* the bushes were swept over once without getting anything, and then on the second time over I took these specimens. I do not know whether they were down in the bushes and I stirred them up, or if it was the time of day, or what. All that I have taken so far were caught between 4:30 and 6:00 p. m. I have swept sage brush a half day at a time before and since these specimens were taken without any luck, so perhaps I did pretty well in getting these eight or ten in an hour or so one afternoon."

Phytocoris roseipennis n. sp.

Allied to *roseotinctus* Knegt., but size larger; distinguished by three longitudinal white lines on pronotum and scutellum, longer head, and in structure of male genital claspers.

♂. Length 8.36 mm., width 2.3 mm. Head: width 1.08 mm., vertex .54 mm.; elongated, from base of eyes to tip of tylus .91 mm., from base of eyes to apex of frons .71 mm.; frons convex apically, tylus prominent, deeply impressed at base; eyes set at an oblique angle, their base distinctly removed (.12 mm.) from collar; white to yellowish, tinged with roseus on tylus, median line of vertex and frons white, obsolete lines on frons roseate. Rostrum, length 4.24 mm., reaching upon seventh ventral segment, fuscous to blackish, basal segment pale and reaching beyond middle of front coxae. Antennae: segment I, length 2.12 mm., nearly cylindrical (.17 mm. thick at middle), slightly thicker near base, clothed with white pubescence and erect white hairs, length of hairs equal to or slightly exceeding thickness of segment, tinged with roseus and dusky; II, 3.94 mm., dusky brown, paler at base, clothed with short pale pubescence; III, 2.38 mm., dark brown to fuscous; IV, 1.3 mm., fuscous. Pronotum: length 1.47 mm., width at base 2.08 mm.; basal margin sinuate at middle, collar rather broad and flat.

Dorsum clothed with fine silvery, sericeous pubescence and intermixed with more erect white hairs, the latter longer and more prominent on pronotum and head. General coloration pale, the dorsum roseus, more strongly colored on hemelytra, a sharply defined, median, longitudinal white line on scutellum, pronotum and extending upon head, also a somewhat broader white stripe each side of this median line, dividing each half of disk into quarters, the stripe continuing across mesoscutum and on lateral margins of scutellum; this pale

stripe may also be recognized upon head behind and in front of the dorsal half of eyes. Hemelytra roseus, embolium and edge of corium, cuneus except inner margin, claval vein and inner margins of clavus pale to white. Membrane dark fuscous, cubitus pale, a reddish callus mark bordering cubitus before apex of larger areole. Legs pale to yellowish, femora tinged with roseus and dusky brown, irrorate with pale dots, set with prominent, erect white hairs; tibiae yellowish white, apices fuscous, spines brownish, tarsi and claws brownish to black. Venter roseate, a moderately broad, longitudinal white line each side, dorsal edge and base of abdomen pale. Genital claspers distinctive, form of right clasper very similar to that of *confluens* Reut., but otherwise not related; wall of genital segment with a blunt tubercle at the angle above base of left clasper.

♀. Length 7.4 mm., width 2.5 mm., brachypterous. Head: width 1.08 mm., vertex .61 mm. Antennae: segment I, length 2.3 mm., roseate; II, 4.07 mm., uniformly dusky brown; III, 2.47 mm., fuscous, pale at base; IV, 1.25 mm., blackish. Pronotum: length 1.12 mm., width at base 1.64 mm. Hemelytra brachypterous, leaving three abdominal segments exposed; cuneus present but short and rounded; membrane represented by a small flap. Dorsum paler than in the male, corium with a longitudinal fusco-brownish stripe (this stripe apparent in the male but largely obscured by the roseate coloration); scutellum with roseate stripe each side of the white median line; femora and venter roseate as in the male, the tergites of the abdomen roseate except for white median line.

Holotype: ♂, Sept. 20, 1928, Santa Cruz Co., Arizona (A. A. Nichol); author's collection. *Allotype*: same data as type. *Paratypes*: 3♂, 8♀, taken with the types (A. A. Nichol), "on grasses." ♂, ♀, Sept. 29, 1929, Patagonia, Arizona (E. D. Ball). ♂, Sept., 1906, Nogales, Arizona (A. Koebele). ♀, Sept. 8, ♂, Sept. 13, 3♀, Sept. 16, 3♂, 1♀, Sept. 23, 1927, Texas Canyon, Chiricahua Mts., Cochise Co., Arizona (J. A. Kusche), collection of California Academy of Sciences.

Concerning this species Mr. A. A. Nichol wrote as follows: "Yesterday I was out for a few minutes and took some Mirids which I know will prove interesting to you. Two of these were taken from a gramma grass, pitifully small relics of it which still hang on in very, very small spots and which I am afraid will soon disappear because of over-grazing."

"The Phytocoris species with the short winged females were collected in those grass relics I mentioned. I took Professor McGinnies, our range specialist, to examine them and he says *Hilaria* sp.,

Aristida spp., and a sprinkling of *Velota* and slender gramma (*Bouteloua*) make up the majority of the plots."

***Phytocoris fuscipennis* n. sp.**

Allied to *roseipennis* but differs in the shorter first antennal segment which is blackish beneath; hemelytra fuscous, costal margin pale; genital segment without tubercle above base of left clasper.

♂. Length 9.2 mm., width 2.5 mm. Head: width 1.12 mm., vertex .58 mm., viewed from above the tylus projecting prominently beyond the frons, from base of eyes to tip of tylus .82 mm., from base of eyes to apex of frons .65 mm. Rostrum, length 4.5 mm., reaching upon sixth ventral segment, brownish to black. Antennae: segment I, length 1.49 mm., nearly cylindrical but thicker (1.7 mm.) near base, pale above, blackish beneath, clothed with pale pubescence and white erect hairs, the latter more abundant on inner surfaces, length of hairs about equal to thickness of segment; II, 3.85 mm., cylindrical, pale yellowish brown, a blackish spot beneath at base; III, 2.12 mm., brownish; IV, 1.21 mm., fuscous. Pronotum: length 1.34 mm., width at base 1.99 mm., very slightly sinuate on middle of base. Scutellum moderately and evenly convex, fuscous to blackish, median line and sides paler.

Dorsum clothed with recumbent, somewhat sericeous, pale pubescence, intermixed with longer and more erect white hairs, the latter longer and more prominent on margins of pronotum and basal half of hemelytra. General coloration pale and darkened with fuscous; clavus and corium rather uniformly darkened, outer margin of corium tinged yellowish, embolium and narrow outer margin of cuneus white. Sternum, xyphus and gula blackish, face largely infuscated. Legs pale to dusky brown, coxae blackish, hairs and pubescence whitish, tibial spines brownish, tarsi fusco-brownish. Venter pale yellowish to fuscous, darker on ventral surface of genital segment. Genital structures distinctive, left clasper rather similar to *roseipennis* but without tubercle above base; right clasper more slender, ligulate and with small claw at apex.

Holotype: ♂, September 23, 1927, Texas Canyon, alt. 5700 ft., Chiricahua Mts., Arizona (J. A. Kusche); collection of California Academy of Sciences. *Paratypes*: 25♂, Sept. 23; 1♂, Sept. 16, taken with the type in trap light (J. A. Kusche). ♂, July, 1923, Douglas, Arizona (H. Letcher). No doubt the female of this species is brachypterous which explains why no females were taken at a trap light.

Phytocoris longirostris n. sp.

Allied to *roseipennis* but differs in being rather uniformly pale in color, by the longer rostrum which attains base of genital segment in the male, and by the shorter first antennal segment; male distinguished by lack of a tubercle above base of left clasper. Differs from *fuscipennis* by the pale coloration, longer rostrum and smaller size.

♂. Length 7 mm., width 2 mm. Head: width 1.04 mm., vertex .54 mm.; tylus and apex of frons somewhat less prominent than in *roseipennis*, uniformly pale yellowish. Rostrum, length 4 mm., attaining base of genital segment, yellowish to brown, the apical segment blackish. Antennae: segment I, length 1.25 mm., yellowish white, pale pubescent, bearing erect white bristles, length of a few exceeding thickness of segment; II, 2.94 mm., dusky yellow, pale pubescent; III, 1.82 mm., fusco-brownish, narrowly pale at base; IV, 1.21 mm., fuscous. Pronotum: length 1.08 mm., width at base 1.66 mm.; basal margin sinuate at middle, collar rather broad and flat.

Dorsum clothed with recumbent, slightly sericeous, white pubescence and intermixed with more erect, longer white hairs. General coloration pale yellowish to white, an obsolete longitudinal white line is evident on scutellum and less distinctly on pronotum and head. Membrane uniformly pale fumate, veins white, cubitus dusky except apically, an opaque whitish callus bordering cubitus before apex. Legs uniformly pale yellowish, white pubescent, tibial spines yellowish brown, tarsi and tips of tibiae brown to dusky brown. Genital segment without tubercles, the claspers rather similar to *fuscipennis* in form but right clasper more slender apically and with longer claw.

♀. Length 6.3 mm., width 2 mm., brachypterous. Head: width 1.12 mm., vertex .69 mm. Rostrum, length 4.5 mm., reaching beyond base of ovipositor or to middle of segment eight. Antennae: segment I, length 1.6 mm., uniformly yellowish white; II, 3.46 mm., whitish, becoming brownish apically; III, 2.16 mm., dusky brown; IV, 1.3 mm., fuscous. Pronotum: length .95 mm., width at base 1.47 mm. Heme-lytra brachypterous, leaving three or four abdominal segments exposed; cuneus evident as a rounded flap, membrane scarcely evident. General coloration pale yellowish to white, a brownish cloud sometimes evident on middle of corium.

Holotype: ♂, September 19, 1928, Tucson, Arizona (A. A. Nichol); author's collection. *Allotype*: same date as type. *Paratypes*: ♂, ♀, taken with the types by Mr. Nichol on the same grasses described for *roseipennis*. ♀, July 25, 1922, Douglas, Arizona (H. Letcher).

Phytocoris seminotatus n. sp.

Allied to *fuscipennis* but head shorter and eyes vertical; differs in the pale color, a dusky spot only on apical area of corium; membrane conspurcate within the areoles and two spots on apical half.

♂. Length 7.6 mm., width 2.4 mm. Head: width 1.12 mm., vertex .49 mm.; vertical, frons convex apically, prominent, tylus not visible as viewed from above, deeply impressed on base and separated from frons; antero-dorsal angle of lora projecting as a tubercle; eyes large, vertical in position. Rostrum, length 2.73 mm., reaching upon third ventral segment, pale, apex blackish. Antennae: segment I, length 1.56 mm., thicker (.15 mm.) near base, and tapering to more slender (.12 mm.) on apical half, and thicker (.13 mm.) again at apex, uniformly pale yellowish, white pubescent, beset with numerous white bristles, the length (.21 mm.) of many distinctly greater than thickness of segment; II, 2.94 mm., cylindrical, pale to brownish, white pubescent; III, 1.86 mm., yellowish brown; IV, 1.12 mm., pale fuscous. Pronotum: length 1.17 mm., width at base 1.96 mm., basal margin arcuate, only very slightly sinuate at middle. Scutellum moderately, evenly convex, uniformly pale yellowish.

Dorsum clothed with fine silvery white, sericeous, recumbent pubescence and more erect simple white hairs, also interspersed with a few erect fuscous bristles, particularly on apical area of corium, disk of clavus and basal half of pronotal disk. General coloration pale yellowish to white, apical area of corium dusky, cuneus dusky to pale fuscous on apical half. Membrane and veins white, within the areoles, a submarginal spot behind cuneus and larger area on apex of membrane, conspurcate or reticulate with fuscous. Legs pale yellowish to white, hind femora darkened with fuscous-brown to reddish-brown, thickly irrorate with small and a few large white spots; tibiae white, clothed with white hairs, spines brown, apical half of hind tibia bearing black micro-setae; tarsi brownish, apical segment blackish. Ventral surface yellowish to white. Genital segment distinctive, a prominent blunt tubercle projecting posteriorly from the angle of segment wall just above base of left clasper, a smaller but distinct tubercle in like position above base of right clasper. Claspers rather similar in structure to those of *longirostris* but distinguished by the tubercles; otherwise the species differ greatly in form of head and length of rostrum.

♀. Length 6.8 mm., width 2.3 mm. Head: width 1.04 mm., vertex .52 mm. Rostrum, length 2.73 mm., reaching upon third or fourth ventral segment. Antennae: segment I, length

1.51 mm.; II, 2.81 mm.; III, 1.81 mm.; IV, 1.17 mm. Pronotum: length 1.12 mm., width at base 1.95 mm. Very similar to the male in form, pubescence and coloration.

Holotype: ♂, September 19, 1928, Tucson, Arizona (A. A. Nichol); author's collection. *Allotype*: same data as the type. Mr. Nichol took these specimens on grasses, evidently one of the species mentioned under the description of *roseipennis*. ♂, ♀, Sept. 16, ♂, 2♀, Sept. 23, ♀, Sept. 30, ♂, Oct. 1, ♂, ♀, Oct. 14, 1927, Texas Canyon, Chiricahua Mts., Arizona (J. A. Kusche). 2♂, Sept., 1906, Nogales, Arizona (A. Koebele); coll. Calif. Acad. Sciences.

Phytocoris difformis n. sp.

Not closely allied to any described species; belongs to the group with conspurcate membrane and bearing some deciduous, black scale-like hairs on the dorsum; scutellum sharply convex behind middle, hind femora strongly tapered on apical half.

♂. Length 5.5 mm., width 1.95 mm. Head: width 1.04 mm., vertex .37 mm.; vertical in position, tylus not visible as viewed from above, tylus arcuate, lora strongly exerted, eyes rather large; frons with several oblique black lines on each side, lower half of face white, irregular mark across middle of tylus, dorsal margins of lora and bucculae, reddish black. Rostrum, length 2.9 mm., reaching upon sixth ventral segment, dark brownish, basal segment white. Antennae: segment I, length 1.38 mm., slightly thicker near base, tapering to slightly more slender apically, black, with several more or less confluent white spots on dorsal aspect, black pubescent, provided with several bristle-like white hairs, length of these hairs not exceeding thickness of segment; II, 2.8 mm., black, with white band at base and one at slightly beyond middle; III, 2.38 mm., black, narrow white band at base; IV, 1.17 mm., brownish black. Pronotum: length .95 mm., width at base 1.82 mm.; disk grayish to blackish, narrow basal margin pale and bordered with black line of varying width; bordering calli behind, dorsal margin of propleura and a mark across middle of coxal cleft, black. Scutellum sharply convex at slightly behind middle, black, an X-like pale mark with crossing point on the center of convexity, the apex of scutellum sharply depressed and with oblong black mark on median line.

Dorsum clothed with simple, short black pubescent hairs, intermixed with closely appressed, white sericeous pubescence, the whole intermixed with deciduous, black scale-like hairs; the erect black hairs prominent on collar, apex of clavus, and

two tufts on membrane margin of cuneus and paracuneus. Hemelytra grayish white and marked with blackish, claval vein, inner margin of corium, spot before middle and radial vein, embolium except for a few small spots, paracuneus, inner margin and apex of cuneus, black or shaded with black. Membrane white, thickly conspurcate and reticulate with fuscous to black, two white spots on membrane margin behind cuneus. Sternum black, margins of epimera and the ostiolar peritreme white. Legs white and marked with black, front and middle femora with blackish reticulations due to coalescing white spots; hind femora thick at middle and tapering sharply to slender at apex, black except base, thickly marked with both large and small coalescing white spots; tibiae black, front pair triannulate with white, the middle pair with four white bands, hind tibiae largely blackish and checkered with white glabrous spots from which arise either white or black spines. Venter chiefly blackish, marked with white spots which laterally and beneath coalesce to give a pale ground color upon which remnants of blackish reticulations may be traced. Genital segment without tubercles, right clasper ligulate, tapering apically, terminating in a short thick claw which fits into a groove on terminal portion of left clasper.

♀. Length 6.2 mm., width 2.3 mm. Head: width 1.12 mm., vertex .48 mm. Antennae: segment I, length 1.81 mm.; II, 3.29 mm.; III, 2.16 mm.; IV, broken. Pronotum: length 1.04 mm., width at base 1.97 mm. Very similar to the male in form, color and pubescence.

Holotype: ♂, July 19, 1917, Texas Pass, Arizona (H. H. Knight); author's collection. *Allotype*: same data as the type. *Paratypes*: ♀, taken with the types on a tent trap light. ♀, July 15, 1917, Bonita, Arizona (H. H. Knight), at trap light. ARIZONA—♀, May 24, ♀, June 7, 1924, Tucson (A. A. Nichol). ♂, July 25, 2♂, July 22, ♂, ♀, Aug. 1, 1925, Tucson (A. A. Nichol & B. B. Streets). ♀, Sept. 2, 1926, Rincon Mts. (A. A. Nichol). ♂, May, 1929, Tucson (E. D. Ball). ♀, Baboquivaria Mts. (F. H. Snow). 3♀, July 25, ♂, July 27, 1924, Oracle (E. P. Van Duzee & J. O. Martin), on *Acacia greggi*. ♂, Aug. 11, Tucson, ♀, Aug. 10, 1924, Florida Canyon, Santa Rita Mts. (E. P. Van Duzee). ♂, Oct. 17, Maricopa; ♀, Aug. 22, 1927, Chiricahua Mts. (J. A. Kusche). ♀, June 7, 1930, Congress (G. Linsley).

Phytocoris varius n. sp.

Related to *palmeri* Reut. as indicated by three types of pubescence and conspurcate membrane, but differs in the

smaller size, paler color with speckled hemelytra, and in form of genital structures.

♂. Length 6.4 mm., width 2.1 mm. Head: width 1.08 mm., vertex .41 mm.; tylus visible from above, lora rather prominent; yellowish, frons with fine reddish marks, lower half of tylus, lora, upper half of juga, basal edge of bucculae, and two rays behind eye, blackish. Rostrum, length 2.64 mm., reaching upon sixth ventral segment, pale, apical half brownish to black. Antennae: segment I, length 1.17 mm., pale, fuscous beneath, brownish reticulations above, clothed with rather long white pubescence, intermixed with several white bristles which in length exceed thickness of segment; II, 2.73 mm., uniformly pale dusky, narrowly white at base; III, 1.69 mm., pale fuscous; IV, 1.08 mm., fuscous. Pronotum: length .83 mm., width at base 1.51 mm.; disk pale to dusky, lateral margins and a subbasal line fuscous to blackish, slender basal edge white, collar and calli yellowish, two spots on collar and inner angles of calli fuscous; propleura blackish, lower margin and ray across top of coxal cleft pale to yellowish. Mesoscutum and scutellum blackish, basal angles of scutellum and median line on apical half pale to white.

Hemelytra whitish, rather uniformly speckled with fuscous dots, each dot formed at the base of a black hair, radial vein except for interruption on middle, narrow inner margin and apex of cuneus, blackish. Dorsum clothed with sericeous, white pubescence, and intermixed with more erect fuscous to black simple hairs, the whole interspersed with deciduous, scale-like black hairs. Membrane white, rather evenly conspurcate with fuscous dots and reticulations, cubital vein opaque white, smaller vein fuscous. Sternum, pleura and venter rather uniformly blackish, ostiolar peritreme and lower margin of epimera white. Legs pale, base of hind and middle coxae with blackish spot, femora with brownish black lines and reticulations, dorsal aspect of hind femora black, a few small white spots on posterior aspect, ventral aspect pale with dark reticulations; tibiae pale, with brownish dots and reticulations on basal half, pubescent hairs white, spines brown. Genital segment distinctive, a moderate sized tubercle formed on wall somewhat above base of left clasper; left clasper of the simple curving type, right clasper ligulate, slightly bent near base, apical half tapering to a brown claw on apex.

♀. Length 5.9 mm., width 1.94 mm. Head: width 1.02 mm., vertex .476 mm. Rostrum, length 2.68 mm., reaching upon sixth ventral segment. Antennae: segment I, length 1.21 mm.; II, 2.75 mm.; III, 1.86 mm.; IV, 1.12 mm. Pronotum: length .78 mm., width at base 1.45 mm. Very similar to the male in form, color and pubescence.

Holotype: ♂, September 6, 1931, Grand Canyon (H. H. Knight); author's collection. *Allotype*: ♀, taken with the type. *Paratypes*: ♂, 3♀, taken with the types by beating on large cedar trees (*Juniperus* sp.) which were found growing behind the cabin camp located at the entrance gate of the Grand Canyon National Park. ♀, Aug. 13, 1925, Durango, Colorado (H. H. Knight). 3♂, June 20, 1928, alt. 6200 ft., Chiricahua Mts., Arizona (A. A. Nichol).

***Phytocoris calli* n. sp.**

Allied to *conspurcatus* Kngt., but distinguished by a median white line on mesoscutum and scutellum, third antennal segment with pale annulus only at base, while the second segment is largely pale and not sharply annulate.

♂. Length, 6.1 mm., width 2.1 mm. Head: width, 1.03 mm., vertex .38 mm. Rostrum, length 3.1 mm., reaching upon genital segment, pale, apical half brownish, apex blackish. Antennae: segment I, length 1.33 mm., white, dorsal aspect with three blackish areas which are separated by two white spots or bands, spines white to brownish; II, 2.75 mm., yellowish brown to fuscous, white at base, rather broadly paler at middle but not sharply annulate, the basal half with three obscure but evident paler spots; III, 1.6 mm., black, white only at base; IV, 1 mm., black. Pronotum: length .98 mm., width at base 1.75 mm. Mesoscutum dark with a distinct white median line which extends upon the largely pale scutellum, but upon the latter the pale line is bordered by dark color.

Dorsum clothed with black scale-like hairs and intermixed with white sericeous pubescence and simple black hairs much as in *conspurcatus*. Hemelytra conspicuously marked with white, corium with base, middle, and apex with prominent white areas, clavus whitish on inner margins, also with three or four white spots through the middle. Membrane much as in *conspurcatus* but paler, the cubitus white. Legs rather similar to *conspurcatus* but the hind tibiae with a broad white band on basal half. Genital characters indicate a close relationship with *conspurcatus* but the tubercle above base of left clasper appears longer in that it extends beyond the basal angle of the clasper, the latter being shorter in structure.

Holotype: ♂, from aspen grove, Brigham Young University campus, Timanogas, Utah (Anson Call, Jr.); author's collection.

***Phytocoris squamosus* n. sp.**

Differs from all described species in having a brush-like

fringe of hairs on ventral surface of first antennal segment; form slender, collar pale and marked with fuscous, clothed with appressed, silvery, scale-like pubescence and intermixed with simple fuscous hairs.

♂. Length 5.2 mm., width 1.4 mm. Head: width .82 mm., vertex, .43 mm., length from base of eyes to tip of tylus .62 mm., the tylus visible as viewed from above, basal half somewhat swollen and arcuate as viewed from the side, eyes oblique in position; frons and vertex nearly horizontal in position, only slightly convex, median line pale, with curving oblique fusco-reddish lines on each side of frons. Rostrum, length 2.42 mm., attaining base of fourth ventral segment, yellowish, apex blackish. Antennae: segment I, length 1.4 mm., clothed with long sericeous white hairs, forming a brush on ventral surface, length of hairs equal to and some exceeding thickness of segment, dorsal surface provided with a few white bristles, their length about equal to thickness of segment, color fuscous, with several coalescing white spots on dorsal aspect; II, 2.51 mm., brownish black, more blackish on apex, clothed with appressed, short white pubescence; III, 1.38 mm., black, base narrowly white; IV, 1.08 mm., black. Pronotum: length .84 mm., width at base 1.3 mm.; yellowish, calli and three or four obsolete rays reddish, narrow basal margin thickly coated with silvery scales, disk with finer and more yellowish, sericeous pubescence; collar strongly flattened, stricture shallow. Mesoscutum broadly exposed, sloping gradually to the moderately convex scutellum, brownish black, basal angles and apex of scutellum, including a partial median line, white, thickly covered with closely appressed, white scales.

Hemelytra white, largely clothed with white scales, but apical half of corium except edges and discal area of clavus, without scales and bearing simple fuscous pubescence; tip of clavus, two tufts on membrane margin of cuneus and paracuneus, apex of embolium and tip of cuneus bearing prominent black hairs; base of clavus, streaks on claval vein, two or three small spots and apex of embolium, radial vein, inner margin of clavus and continuing across paracuneus, inner margin and apex of cuneus, and small dots on disk of cuneus, fuscous to blackish. Membrane opaque white, conspurcate and reticulate with brownish black, an arcuate white band extending from apex of larger areole to tip of membrane, also two smaller white spots, one behind apex of cuneus and the second about half way to tip of membrane; veins yellowish white, base of anal vein with reddish. Legs white and marked with blackish, apical half of femora streaked and spotted with blackish, hind femora thicker on basal half, tapering sharply

to more slender on apical half, slightly curved, anterior aspect with two partially defined longitudinal blackish lines; tibiae yellowish to white, spines chiefly white but a few black mixed in, front pair with spots and apices fuscous, hind pair with small dots only; tarsi black. Venter white, thickly covered with white scales, a sharply defined lateral line, genital segment except bordering claspers, also more or less on basal part of seventh and eighth segments, black. Genital segment without tubercles, right clasper ligulate on basal half, apical half tapering to a sharp point and sloping upward; left clasper of the ordinary type, thick at base then tapering sharply to the slender apical half which in this case is black.

♀. Length 4.9 mm., width 1.38 mm. Head: width .82 mm., vertex .47 mm. Antennae: segment I, length 1.81 mm., II, 3.11 mm., black, with two or three white spots on basal half; III, 1.6 mm.; IV, broken. Pronotum: length .69 mm., width at base 1.04 mm. Membrane abbreviated, just attaining apex of abdomen, dorsal surface of abdomen thickly covered with silvery scales. Color and pubescence very similar to that of the male.

Holotype: ♂, July 15, 1917, Bowie, Arizona (H. H. Knight); author's collection. *Allotype*: ♀, July, 1929, Tucson, Arizona (E. D. Ball). *Paratypes*: 4♂, taken with the type. 3♂, 1♀, taken with the allotype. ♂, June 6, 1930, Mojave, California (R. L. Usinger). ♂, Oct. 14, 1927, Patagonia, Arizona (J. A. Kutsche).

Phytocoris nigrisignatus n. sp.

Allied to *quercicola* Kngt. and relatives but distinguished from all known species by the short pubescence and pale color with distinctive black markings.

♀. Length 6.3 mm., width 2.2 mm. Head: width 1.04 mm., vertex .45 mm. Rostrum, length 3.11 mm., reaching upon fourth ventral segment, brownish black, first segment paler. Antennae: segment I, length 1.38 mm., cylindrical, slightly thicker near base, pale yellowish, basal construction blackish, ventral aspect with blackish line which becomes obsolete on basal half, clothed with short yellowish pubescence, also six or seven short yellowish spines, the longest not equal to thickness of segment; II, 3.0 mm., black, narrow band at base and rather broadly on middle, pale yellowish; III, 1.56 mm., uniformly yellowish; IV, broken. Pronotum: length 1.08 mm., width at base 1.73 mm.

Dorsum clothed with appressed, short, pale yellowish, sericeous pubescence and intermixed with more erect short fuscous hairs, the latter more prominent on pronotum. General

coloration pale yellowish and marked with black; pronotum except basal margin, median line, inner half of calli, dorsal aspect of collar and lower margin of propleura, black; broad stripe behind eyes, narrow stripe around antennal socket and extending across impressed base of tylus, mesosternum except median line, small mark on each lateral margin of scutellum before apex, four or five spots on embolium, inner apical angles of clavus, apex and inner margin of cuneus, black. Membrane white, speckled with scattering fuscous dots, within larger areole more thickly conspurcate, smaller areole and lateral vein blackish, cubitus yellowish, apex of membrane and small group of dots on lateral margin behind cuneus, fuscous dotted. Legs yellowish, femora irregularly marked with blackish on apical half, the hind femora more broadly black, irrorate with moderately large white spots; tibiae triannulate with alternating bands of pale and black, with black band at apex, middle, and middle of basal half; tarsi blackish, claws brownish. Venter uniformly yellowish, second and third segments with lateral fuscous mark.

Holotype: ♀, June 25, 1917, Victoria, Texas (H. H. Knight), taken on *Quercus* sp.; author's collection.

This species is so distinctive in coloration and pubescence I feel that it may be safely recognized from the female here described when next it comes to hand.

***Phytocoris albellus* n. sp.**

Allied to *ventralis* Van D. as indicated by the deciduous black and white scale-like hairs on the dorsum, but differs in the more slender first antennal segment, more vertical type of head, and nearly white color.

♀. Length 3.9 mm., width 1.56 mm. Head: width .78 mm., vertex .38 mm.; nearly vertical in position, tylus not visible from above, frons and vertex evenly convex, eyes moderate in size, vertical in position, posterior margin nearly in contact with collar, lora prominent. Rostrum, length 1.8 mm., reaching upon fourth ventral segment, yellowish brown, darker at apex. Antennae: segment I, length .74 mm., thickness .10 mm., cylindrical, slightly more slender on apical half, black, dorsal aspect with two large and three smaller white spots, with yellowish and black pubescence, beset with three or four pale bristles, length of one or two bristles exceeding diameter of segment; II, 1.88 mm., slender, yellowish brown, narrow white band at base, pale on middle and darker brown on apex; III, 1.04 mm., fuscous brown, pale at base; IV, .77 mm., blackish. Pronotum: length .64 mm., width at base 1.25 mm.

Dorsum clothed with fine, pale yellowish pubescence and fuscous hairs, intermixed with both black and silvery white, deciduous scale-like hairs. General coloration yellowish white, an oblique mark across inner apical angles of corium, mesoscutum, collar above, basal margin of pronotal disk, dorsal margin of propleura, mark across middle of coxal cleft, ray behind dorsal one-third of eye, mark across base of juga, spot on each side of tylus at middle, sternum, blotch on middle of eighth ventral segment, small dot each side on lateral margin of scutellum before apex, and tip of cuneus, black. Membrane dark fuscous, closely and thickly dotted and reticulate with white, two somewhat larger white spots along margin behind cuneus, veins fuscous, cubitus about apex of larger areole, white. Legs white, apical half of femora sparsely marked with irregular black reticulations which consolidate to form one or two black patches just before apex; front tibiae triannulate with black, middle and hind tibiae with bands indistinct except at middle, tarsi pale, tips fuscous.

Holotype: ♀, August 5, 1929, Payson, Arizona (E. D. Ball); author's collection. A pretty little white form that may be readily recognized by the black markings.

Phytocoris pulchellus n. sp.

Runs to *luteolus* Kngt. in my key (Hem. Conn., 1923, p. 644) but differs in the fuscous pronotum and uniformly greenish yellow clavus and corium; distinguished structurally by the shorter first antennal segment and in the male by a double tubercle above base of left genital clasper.

♂. Length 4.7 mm., width 1.56 mm. Head: width .86 mm., vertex .28 mm.; tylus and lora less prominent than in *luteolus*. Rostrum, length 1.86 mm., reaching upon fourth or fifth ventral segments. Antennae: segment I, length .97 mm., white, irregularly marked with orange, pale pubescent, provided with four or five white spines; II, 2.03 mm., uniformly yellowish brown; III, 1.08 mm., dusky brown; IV, broken. Pronotum: length .75 mm., width at base 1.38 mm.

Dorsum clothed with simple yellowish pubescence and more or less intermixed with silvery sericeous pubescence. General coloration yellowish to greenish yellow and marked with reddish; scutellum, clavus and corium uniformly greenish yellow, in darker specimens tinged with reddish; pronotum rather uniformly infuscated, tinged with reddish, collar, mesoscutum, base of corium and paracuneus, reddish; cuneus with yellow ground color, irregularly marked with coalescing red dots, the red color dominant in darkest specimens; head

irregularly marked with orange red, sternum, pleura, and venter orange to red. Membrane pale, conspurcate with nearly obsolete fuscous brown marks, veins fuscous to reddish, pale about apices of areoles. Legs pale to reddish, hind femora dark red except base, irrorate with small white spots and dots; tibiae pale, front pair with three obsolete orange bands, hind pair broadly reddish on base only; tarsi pale to yellowish brown, claws brown. Genital segment distinctive, provided with a double tubercle above base of left clasper, the outer one larger and more prominent, right side without tubercle; right clasper ligulate, narrowed toward tip, the apex terminating in a slightly curved claw.

♀. Length 4.7 mm., width 1.7 mm. Head: width .86 mm., vertex .34 mm. Antennae: segment I, length 1.12 mm.; r II, 2.3 mm.; III, 1.08 mm.; IV, broken. Pronotum: length .80 mm., width at base 1.43 mm. Form, pubescence and coloration very similar to the male except the dorsum generally with clearer greenish yellow.

Holotype: ♂, September 9, 1925, alt. 4500 ft., Santa Rita Mts., Arizona (A. A. Nichol); author's collection. *Allotype*: ♀, May 17, 1931, Santa Rita Mts. (E. D. Ball). *Paratypes*: ♀, April 19, 1924, Tucson, Arizona (A. A. Nichol). 3♂, 3♀, taken with the allotype on *Quercus oblongifolia* by Dr. E. D. Ball.

Tornados and Butterfly Migrations in Texas.—Following in the wake of tornados we learn of the migration of tropical butterflies well into the interior of Texas. H. B. Parks, State Agriculturist, reports the capture of 42 specimens of the genus *Gonepteryx* at San Antonio during the last week in August and the first week in September, 1933. Eight of these were *clorinde* and the others about equally divided among two other species. These huge butterflies, he writes, were a glorious sight. They arrived in large numbers and stayed with us for about a week. San Antonio appeared to be the center of their flight, but two also have records from Kerrville and Houston and I saw them at Austin. During that time and since I have collected six specimens of *Chiomaria asychis*, 1 *Callidryus philea*, 2 *Coloemis julia*, 1 *Heliconius charitonius*, 1 *Athena petreus* and 5 *Victorina stencles*.

While all of these and other tropical butterflies are listed by Holland as ranging across the Mexican border, their appearance in large numbers far inland is a notable experience. We should like to hear more of the extent of these migrations.—GEO. P. ENGELHARDT, Hartsdale, N. Y.